LITERATURE SURVEY

1. Title: IoT-Based Wireless EV Charging System For Electric Vehicle Using Inductive Power Coils.

- **Year of Publication:** 2023
- **Publisher:** International Journal of Current Science (IJCSPUB)
- **Methodology:**
    - Strategic installation of charging components to optimize efficiency and accessibility.
    - Implementation of inductive power transfer techniques for seamless energy transmission.
    - Integration of an ESP32 module for real-time monitoring, ensuring efficient and secure charging.
- **Conclusion:**
    - Emphasizes the critical role of Electric Vehicles (EVs) in reducing carbon emissions in public transportation.
    - Highlights the user-friendly and efficient nature of wireless charging processes.
    - Simulation results confirm the effectiveness of non-radiative wireless power transmission, showcasing high efficiency rates at specific distances.
    - Underlines the potential of such systems to contribute to the transition towards sustainable energy sources.

2. Title: IoT-Based Electric Vehicle Charging Station

- **Year of Publication:** 2022
- **Publisher:** International Research Journal of Engineering and Technology (IRJET)
- **Methodology:**
    - Utilizes QR Code Scanning and Port Selection through an Android app (Java, XML).
    - Recommends charging duration based on the user's wallet balance, enhancing user convenience.

    - Implements Communication Cable Verification for secure and authorized access.
    - Automates the charging initiation process after successful checks.
- **Conclusion:**
    - Aims for an automated charging station managed through an Android app, prioritizing user ease.
    - Emphasizes internet-controlled functions and simple payment methods for seamless user experiences.
    - Validates subscriptions via communication cables, ensuring authorized access.
    - Envisions potential enhancements through bidding processes for EV user allocation.

3. Title: Charging Station of Electric Vehicle Based on IoT: A Review

- **Year of Publication:** 2022
- **Publisher:** Open Access Library Journal
- **Methodology:**
    - Reviews and categorizes different State of Charge (SoC) estimation techniques in real-time.
    - Discusses techniques such as Looking-Up Table-Based, Ampere-Hour Integral, and Model-Based Estimation.
- **Conclusion:**
    - Highlights the crucial role of electric vehicles in addressing fuel scarcity and environmental pollution.
    - Advocates for accessible charging stations facilitated by IoT and Internet technologies.
    - Emphasizes the optimization of energy consumption through SoC display via apps, extending battery life.
    - Proposes strategic station placement in parking areas and the integration of renewable energy for sustainable charging beyond the grid.

4. Title: A Review on IoT based Electric Vehicle Charging and Parking System

- **Year of Publication:** 2020
- **Publisher:** International Journal of Engineering Research & Technology (IJERT)
- **Methodology:**

- Enhances parking security through a mobile app sharing slot information and integration with existing infrastructure.
- Utilizes GPS and automated data generation for independent scheduling of EV charging.
- Implements a Charging Management System for streamlined operations.
- Promotes wireless charging for efficiency and convenient slot bookings.

- **Conclusion:**
  - Compares and discusses smart parking, charging, and combined systems.
  - Focuses on developing an efficient Internet of Things (IoT) platform for enhanced functionality.
  - Provides a comparative table of research papers, addressing various methods, sensors, controllers, and cloud servers for automatic, reliable, and user-friendly systems.

5. Title: IoT-Based Electric Vehicle Charging Station System

- **Year of Publication:** 2022
- **Publisher:** Grenze International Journal of Engineering and Technology
- **Methodology:**
  - Utilizes an Arduino-run system with IR sensors for EV detection.
  - Controls gate access through a servo motor based on slot availability.
  - Displays Battery State of Charge (SOC) on an LCD and an Android app.
  - Integrates NodeMCU, I2C LCD driver, and IR sensors for automated entry/exit updates.
- **Conclusion:**
  - Explores an IoT-based EV charging system architecture, focusing on key elements for enhanced functionality.
  - Aims to improve the EV charging experience through real-time slot availability and SOC updates.
  - Develops an efficient Android app dedicated to monitoring battery SOC, reducing search time for charging stations and slot availability.

Summary of Literature survey:

The IoT-Based Wireless EV Charging System for Electric Vehicles demonstrates a promising avenue for efficient and user-friendly charging infrastructure. Through strategic installation of charging components and implementation of inductive power transfer techniques, this system offers a seamless charging experience. The integration of an ESP32 module ensures comprehensive real-time monitoring and feedback provision throughout the charging process, emphasizing the importance of efficient energy transmission and user convenience. As electric vehicles emerge as pivotal alternatives in reducing carbon emissions, the system's wireless charging devices simplify the charging process, signifying a step towards a sustainable transportation future. Further optimization and advancements in IoT-based charging systems hold significant potential in revolutionizing the electric vehicle charging landscape for widespread adoption and environmental benefit.

The literature survey encompasses a range of IoT-based Electric Vehicle (EV) charging systems. In the study titled "IoT-Based Wireless EV Charging System For Electric Vehicle Using Inductive Power Coils" (2023), the strategic deployment of charging components, inductive power transfer techniques, and real-time monitoring through an ESP32 module are explored. This paper underscores the pivotal role of EVs in reducing carbon emissions, showcasing the efficiency of wireless charging with high simulation results.

The research on "IoT-Based Electric Vehicle Charging Station" (2022) focuses on user-friendly automation. QR code scanning, wallet-based charging duration recommendations, and secure communication cable verification are integral aspects. The study envisions an automated charging station managed through an Android app, emphasizing internet-controlled functions and subscription validation for authorized access.

In "Charging Station of Electric Vehicle Based on IoT: A Review" (2022), various State of Charge (SoC) estimation techniques for real-time application are categorized. The paper highlights EVs' significance in addressing fuel scarcity and pollution, emphasizing accessible charging stations through IoT technologies. It proposes strategic station placement and renewable energy integration for sustainable charging options.

"A Review on IoT based Electric Vehicle Charging and Parking System" (2020) delves into enhancing parking security and efficient EV charging through a mobile app, GPS, and automated data. The study compares smart parking, charging, and combined systems, focusing

on developing an efficient IoT platform and addressing diverse methodologies and technologies for reliable and user-friendly EV systems.

Finally, "IoT-Based Electric Vehicle Charging Station System" (2022) presents an Arduino-based system with IR sensors for EV detection, gate access control, and real-time Battery State of Charge (SOC) updates. The project aims to streamline EV charging experiences through efficient Android app features, providing real-time slot availability and SOC updates for users, ultimately reducing search time for charging stations.

Sr. No.	Title of the Paper	Year of Publication	Publisher	Methodology	Conclusion
1	Iot-Based Wireless EV Charging System For Electric Vehicle Using Inductive Power Coils.	2023	International Journal of Current Science (IJCSPUB)	The methodology involves the strategic installation of charging components, the implementation of inductive power transfer techniques for efficient energy transmission, and the integration of an ESP32 module for comprehensive real-time monitoring and feedback provision throughout the charging process.	EVs are crucial in the quest for alternative energy sources to cut down carbon emissions in public transportation. Wireless charging devices simplify the EV charging process, offering an effective and user-friendly option. Simulation results affirm the efficacy of non radiative wireless power transmission, displaying high efficiency rates at specific distances.
2	IoT-Based Electric Vehicle Charging Station	2022	International Research Journal of Engineering and Technology (IRJET)	QR Code Scanning and Port Selection: EV owners use an Android app (Java, XML) to scan a QR code above the charging port for	The system's goal is an automated charging station managed through an Android app, prioritizing user ease and efficient

				selection and balance check. Charging Timeout Suggestion: The app recommends an EV charging duration based on the user's wallet balance. Communication Cable Verification. Charging Initiation: After successful checks, charging starts for the EV.	operations. It emphasizes internet-controlled functions and simple payment methods via the app for seamless user experiences. Users can manage charging preferences and payments effortlessly, fostering a worker-free system resembling petrol pumps. Subscription validation via communication cables ensures authorized access, while future considerations include potential bidding processes for EV user allocation, aiming for continual system enhancement.
3	Charging Station of Electric Vehicle Based on IoT: A Review	2022	Open Access Library Journal	To facilitate the comparison of different techniques, SoC in real-time have been shown. These	Electric vehicles play a crucial role in addressing fuel scarcity and curbing environmental pollution.

				have been categorised into four classes, as briefly discussed below. Looking-Up Table-Based Techniques An Ampere-Hour Integral Technique The Model-Based Estimation Techniques	Accessible charging stations, facilitated by IoT and Internet technologies, minimize travel time for users. Displaying SOC via apps optimizes energy consumption, extending battery life for efficient usage. Station placement in parking areas maximizes convenience, while integrating solar and wind energy diversifies sustainable charging options beyond the primary grid.
4	A Review on IoT based Electric Vehicle Charging and Parking System	2020	International Journal of Engineering Research & Technology (IJERT)	The mobile app bolsters parking security by sharing slot information and integrating seamlessly with existing infrastructure. Leveraging GPS and automated data	This paper compares smart parking, charging, and combined charging-parking systems, addressing related issues. It includes a comparative table of research papers and discusses various

				generation, the system independently schedules EV charging, reducing errors and time consumption. Implementing a Charging Management System streamlines operations, and wireless charging offers efficiency over traditional plug-in methods while enabling convenient slot bookings.	methods, sensors, controllers, and cloud servers for automatic, reliable, and user-friendly systems. The focus is on developing an efficient Internet of Things (IoT) platform.
5	IoT Based Electric Vehicle Charging Station System	2022	Grenze International Journal of Engineering and Technology	The Arduino-run system detects EVs using IR sensors, controlling gate access via a servo motor based on slot availability. Upon EV arrival, it showcases	This project explores an IoT-based EV charging system, focusing on architecture, charging methods, and key elements like sensors, LCD display, Node MCU, and cloud integration. It aims to

				Battery State of Charge (SOC) on an LCD and Android app, employing NodeMCU, I2C LCD driver, and IR sensors for automated entry/exit updates. NodeMCU and servo motor manage gate operations while IR sensors update slot statuses on the LCD display during EV entry.	enhance EV charging by offering real-time slot availability and State of Charge (SOC) updates via an LCD display and Android app, streamlining the user experience. The primary goal is to develop an efficient Android app dedicated to monitoring battery SOC, reducing search time for charging stations and slot availability.